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Tying some loose ends in theoretical approaches to the double ionization of helium by Compton scattering

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Recent experiments measuring the double ionization of helium by photon impact probed the range of energies where Compton scattering is the main ionizing mechanism. The observed ratios of double to single ionization are consistent at low energies with theories that use highly correlated initial states (HC) and at higher energies with many-body-perturbation theory (MBPT). As experiments measure this ratio at higher energies, two main theoretical questions remain unresolved: 1) what is the sensitivity of the HC approach to the form of the interaction operator and 2) what is the high energy limit of the MBPT approach? New results presented here help to resolve these questions.

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